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\ANF\A-Nuclear Blog
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[These reminiscences for Hiroshima Day are a precursor to my insider's memoir of the nuclear era—based on my earlier classified work on nuclear war planning, command and control and nuclear crises—"The American Doomsday Machine." This internet series will begin regularly after Labor Day, with successive installments available on my website, www.ellsberg.net-- along with an archive of Nuclear Papers—and other sites and blogs..]

August 6, 1945/2009

During the Second World War, my father was the chief structural engineer in charge of designing the Ford Willow Run plant, a factory to make B-24 bombers for the Air Corps. He was proud of the fact that it was the largest industrial building under one roof in the world. It put together bombers the way Ford produced cars, on an assembly line. The assembly line was a mile and a quarter long.

My father explained to me that it had ended up L-shaped, instead of in a straight line as he had originally designed it. When the site was being prepared, Ford executives noted that the factory would run over a county line, into an adjacent county where the Corporation had less control of taxes and regulations. So the assembly line and the factory housing it had to be bent at right angles to stay inside Ford country.

Once my father took me out to Willow Run to see the line in operation. For as far as I could see, the huge metal bodies of planes were hanging from hooks moving along a belt, with workers installing parts as they moved. It was like pictures I had seen of the steer carcasses in a Chicago slaughterhouse. Three-quarters of a mile along, the bodies were lowered down onto a circular platform that rotated them ninety degrees; then they were hoisted back onto the overhead hooks for the last half mile. Finally, the planes were lowered to the floor, one after another, rolled out the hangar doors at the end of the factory, filled with gas, and flown out to war.

It was an exciting sight for a thirteen-year-old. I was proud of my father. His next wartime job was to design a still larger airplane factory, again the world's largest plant under one roof, the Dodge Chicago plant.

When the war ended, Dad accepted an offer to oversee the buildup of the plutonium production facilities at Hanford, Washington. That project was being run by General Electric under contract with the Atomic Energy Commission. To take the job of chief structural engineer on the project, Dad moved from the engineering firm

of Albert Kahn, where he had worked for years, to what became Giffels and Rossetti. Later he told me that engineering firm had the largest volume of construction contracts in the world at that time, and his project was the world's largest at that time. I grew up hearing these superlatives.

The Hanford project gave my father his first really good salary. But while I was away as a sophomore at Harvard, he left his job with Giffels and Rossetti, for reasons I never learned at the time. He was out of work for almost a year. Then he went back as chief structural engineer for the whole firm. Almost thirty years later, when my father was eighty-nine, I happened to ask him why he had left Giffels and Rossetti.

He said, "Because they wanted me to help build the H-bomb."

This was a rather startling statement for me to hear in 1978. That year I was in full-time opposition to the nuclear arms race, and specifically to the deployment of the neutron bomb—a small H-bomb--which President Carter was proposing to send to Europe. I was arrested four times in 1978 on the railroad tracks at Rocky Flats Nuclear Weapons Production Facility, which produced all the plutonium triggers for H-bombs and was going to produce the plutonium cores for neutron bombs.

One of these arrests was on Nagasaki Day, August 9. The "triggers" produced at Rocky Flats were, in effect, the nuclear components of A-bombs, plutonium fission bombs of the type that had destroyed Nagasaki on that date in 1945. Every one of our many thousands of H-bombs, thermonuclear fusion bombs, requires a Nagasaki-type A-bomb as its detonator.

(I doubt that one American in a hundred knows that simple fact: or thus, has a clear understanding of the reality of our thermonuclear arsenal of the last fifty years. Our popular image of nuclear war—from the familiar pictures of the devastation of Nagasaki and Hiroshima--is grotesquely misleading. Those pictures show us only what happens to humans and buildings when hit by what is now just the *detonating cap* for a modern nuclear weapon, whose explosive power may be twenty, a hundred or a thousand times greater than that of the Nagasaki bomb.)

The plutonium for these weapons came from Hanford and the Savannah River Site in Georgia and was machined into weapons components at Rocky Flats, in Colorado. We blockaded the entrances to the plant on August 9 to interrupt business at usual on the anniversary of the day a plutonium bomb had killed 58,000 humans (about 100,000 by the end of 1945).

I had never heard before of any proposed connection of my father with the H-bomb. He wasn't particularly wired in to my anti-nuclear work or to any of my activism since the Vietnam War had ended. I asked him what he meant.

"They wanted me to be in charge of designing a big plant that would be producing material for an H-bomb." He said that DuPont, which had built the Hanford Site,

would have the contract from the AEC. That would have been for the Savannah River Site. I asked him when this was.

"Late '49."

I told him, "You must have the date wrong. You couldn't have heard about the hydrogen bomb then, it's too early." I'd just been reading about that. The General Advisory Committee of the AEC --chaired by Robert Oppenheimer and including James Conant, Enrico Fermi and Isador Rabi--were considering that fall whether or not to launch a crash program for an H-bomb. They had advised strongly against it, but President Truman overruled them.

"Truman didn't make the decision to go ahead till January 1950. Meanwhile the whole thing was super-secret. You couldn't have heard about it in '49."

My father said, "Well, somebody had to design the plant if they were going to go ahead. I was the logical person. I was in charge of the structural engineering of the whole project at Hanford after the war. I had a Q clearance."

That was the first I'd ever heard that he'd had a Q clearance — an AEC clearance for nuclear weapons design and stockpile data. I'd had that clearance myself in the Pentagon—along with close to a dozen other special clearances above Top Secret--after I left the RAND Corporation for the Defense Department in 1964. It was news to me that my father had had a clearance, but it made sense that he would have needed one for Hanford.

I said, "So you're telling me that you would have been one of the only people in the country who knew we were planning, or considering building the H-bomb in 1949?"

He said, "I suppose so. Anyway, I know it was late '49, because that's when I quit."

"Why did you quit?"

"I didn't want to make an H-bomb. Why, that thing was going to be 1,000 times more powerful than the A-bomb!"

I thought, score one for his memory at eighty-nine. He remembered the proportion right. That was the same factor Oppenheimer and the others predicted in their report in 1949 The first explosion of a true H-bomb, five years later, had 1200 times the explosive power of the Hiroshima blast. It was a million times more powerful than the largest bombs of World War II. That one bomb had almost eight times the explosive force of all the bombs we dropped in that war: more than all the explosions in all the wars in human history.

He went on: "I hadn't wanted to work on the A-bomb, either. But then Einstein

seemed to think that we needed it, and it made sense to me that we had to have it against the Russians. So I took the job, but I never felt good about it.

"Then when they told me they were going to build a bomb 1,000 times bigger, that was it for me. I went back to my office and I said to my deputy, 'These guys are crazy. They have an A-bomb, now they want an H-bomb. They're going to go right through the alphabet till they have a Z-bomb.'"

I said, "Well, so far they've only gotten up to N."

He said, "There was another thing about it that I couldn't stand. Building these things generated a lot of radioactive waste. I wasn't responsible for designing the containers for the waste, but I knew they were bound to leak eventually. That stuff was deadly forever. It was radioactive for 24,000 years."

Again he had turned up a good figure. I said, "Your memory is working pretty well. It would be deadly a lot longer than that, but that's about the half-life of plutonium."

There were tears in his eyes. He said huskily, "I couldn't stand the thought that I was working on a project that was poisoning parts of my own country forever, that might make parts of it uninhabitable for thousands of years."

I thought over what he'd said; then I asked him if anyone else working with him had had misgivings. He didn't know.

"Were you the only one who quit?" He said yes. He was leaving the best job he'd ever had, and he didn't have any other to turn to. He lived on savings for a while and did some consulting.

I thought about Oppenheimer and Conant and Fermi and Rabi, who had, that same month he was resigning, expressed internally their opposition to the superbomb in the most extreme terms possible: it was potentially "a weapon of genocide…whose power of destruction is essentially unlimited…a threat to the future of the human race which is intolerable…a danger to humanity as a whole…necessarily an evil thing considered in any light."

Not one of these men risked his clearance by sharing his anxieties and the basis for them with the American public. Oppenheimer and Conant considered resigning their advisory positions when the president went ahead against their advice. But they were prevailed on not to quit at that time, lest that draw public attention to their expert judgment that the president's course fatally endangered humanity.

I asked my father what had made him feel so strongly, to act in a way that nobody else had done. He said, "You did."

That didn't make any sense. I said, "What do you mean? We didn't discuss this at all. I didn't know anything about it."

Dad said, "It was earlier. I remember you came home with a book one day, and you were crying. It was about Hiroshima. You said, 'Dad, you've got to read this. It's the worst thing I've ever read.'"

I said that must have been John Hersey's book, *Hiroshima*. I didn't remember giving it to him.

"Yes. Well, I read it, and you were right. That's when I started to feel bad about working on an atomic bomb project. And then when they said they wanted me to work on a hydrogen bomb, it was too much for me. I thought it was time for me to get out."

I asked if he told his bosses why he was quitting. He said he told some people, others not. The ones he told seemed to understand his feelings. In fact, in less than a year, the head of the firm called to say that they wanted him to come back as chief structural engineer for the whole firm. They were dropping the DuPont contract (they didn't say why), so he wouldn't have to have anything to do with the AEC or bomb-making. He stayed with them till he retired.

I said, finally, "Dad, how could I not ever have heard any of this before? How come you never said anything about it?"

My father said, "Oh, I couldn't tell any of this to my family. You weren't cleared."

My own intense concern about nuclear weapons, an obsession that has shaped my whole adult life, started long before I got my first clearances (in the Marines, later at the RAND Corporation, the Defense and State Departments). It did not begin in 1946 with Hersey's book nor even with the bombing of Hiroshima in 1945. It had its roots almost a year before that, well before almost any other Americans had any warning of the issue.

It was in a ninth grade social science class in the fall of 1944. I was thirteen, a boarding student on full scholarship at Cranbrook, a private school in Bloomfield Hills, Michigan. Our teacher, Bradley Patterson, was discussing a concept that was current then in sociology, William F. Ogburn's notion of "cultural lag.

The idea was that the development of technology regularly moved much further and faster in human social-historical evolution than other aspects of culture: our institutions of government, our values, habits, our understanding of society and ourselves. Indeed, the very notion of "progress" referred mainly to technology. What "lagged" behind, what developed

more slowly or not at all in social adaptation to new technology was everything that bore on our ability to control and direct technology and the use of technology to dominate other humans.

To illustrate this, Mr. Patterson posed a potential "advance" in technology that might be realized soon. It was possible now, he told us, to conceive of a bomb made of U-235, an isotope of uranium, which would have an explosive power 1000 times greater than the largest bombs being used in the war that was then going on. German scientists had discovered that uranium could be split by nuclear fission in late 1938, in a way that would release immense amounts of energy.

"How could he possibly have raised this question in 1944?" others have asked me, incredulously, when I have told this story. After all, the Manhattan Project working on a U-235 bomb--along with a plutonium bomb--was then top secret, the best-kept secret of the war along with our breaking of Japanese and German codes. The answer is that several popular articles about the possibility of atomic bombs and specifically U-235 bombs appeared during the war in journals like the *Saturday Evening Post*.

Each one of these was heavily investigated by the FBI and military censors of the Project to see if they represented a leak by Project scientists. None did. In every case they turned out to have been inspired by earlier articles on the subject that had been published freely in 1939 and 1940, before scientific self-censorship and then formal classification had set in. Our teacher had come across one of these wartime articles. He brought the potential development to us as an example of one more possible leap by science and technology ahead of our social institutions.

Suppose, then, that one nation, or several, chose to explore the possibility of making this into a bomb, and succeeded. What would be the probable implications of this for humanity? How would it be used, by humans and states as they were today? Would it would be, on balance, bad or good for the world? Would it be a force for peace, for example, or for destruction? We were to write a short essay on this, in a week

I recall the conclusions I came to in my paper after thinking about it for a few days. As I remember, everyone in the class had arrived at much the same judgment. It seemed pretty obvious.

The existence of such a bomb—we each concluded--would be bad news for humanity. Mankind could not handle such a destructive force. It could not control it, safely, appropriately. The power would be "abused": used dangerously and destructively, with terrible consequences. Many cities would be destroyed entirely, just as the Allies were doing their best to destroy German cities without atomic bombs at that very time, just as the Germans earlier had done to the center of Rotterdam and had tried their best to do to London. Civilization, perhaps our species, would be in danger of destruction.

It was just too powerful. Bad enough that bombs existed that could destroy a whole city block. They were called "block-busters": ten tons of high explosive. Humanity didn't

need the prospect of bombs a thousand times more powerful, bombs that could destroy whole cities. It would get out of control.

As I recall, this conclusion didn't depend mainly on who had the bomb, or how many had it, or who got it first. And to the best of my memory, we weren't addressing it as something that might come so soon as to bear on the outcome of the ongoing war. It seemed likely, the way the case was presented to us, that the Germans would get it first, since they had done the original science. But we didn't base our negative assessment on the idea that this would necessarily be a Nazi or German bomb. It would be a bad development, on balance, even if democratic countries got it first.

After we turned in our papers and discussed them in class, it was months before I thought of the issues again. I remember the moment when I did. I can still see and feel the scene.

It was a hot August afternoon in Detroit. I was standing on a street-corner downtown, looking at the front page of the *Detroit News* in a news-rack. I remember a streetcar rattling by on the tracks as I read the headline. A single American bomb had destroyed a Japanese city.

I was thinking—in contrast, I guess, to almost any other American newspaper readers that day, outside the Manhattan Project or our social studies class—I knew exactly what that bomb was. It was the uranium bomb we had studied last fall.

I thought: "We got it first. And we used it. On a city."

I had a sense of dread, a feeling that something very ominous for humanity had just happened. A feeling, new to me as an American, at fourteen, that my country might have made a terrible mistake. I was glad when the war ended the next week, but it didn't make me think that we had been wrong in class the previous fall, or that my first reaction was wrong on August 6.

I remember that I was uneasy, on that first day and in the days ahead, about the tone in Harry Truman's voice on the radio as he exulted over our success in the race for the bomb and its effectiveness over Japan. I generally admired Truman, then and later, but hearing his announcements I was put off by the lack of concern in his voice, of a sense of tragedy, of desperation or fear for the future. It seemed to me that this was a decision best made in anguish; and both Truman's manner and the tone of the official communiqués made unmistakably clear that this hadn't been the case.

Which meant for me that our leaders didn't have the picture, didn't grasp the significance of the precedent they had set and the sinister implications for the future. And that lack of awareness and concern was itself scary. It was as if they were asleep at the wheel of a moving car.

Did I feel definitely that, on balance, the President had actually made a wrong choice

Japanese).

For nearly all other Americans, whatever dread they may have felt about the long-run future of the Bomb (and there was more expression of this in elite media than most people remembered later), that was offset at the time and ever afterwards by a powerful aura of its legitimacy, and its almost miraculous potential for good which had already been realized. For a great many Americans still, the Hiroshima and Nagasaki bombs are regarded above all with gratitude, for having saved their own life or the lives of their husbands, brothers, fathers or grandfathers, which would otherwise have been at risk in the invasion of Japan. For these Americans and many others, the Bomb was not so much an instrument of massacre but a kind of savior, a protector of precious lives.

I'm not addressing here the historical reality behind these beliefs, only the reality of the beliefs themselves and their impact on the developments that followed. The effect on American minds thereafter was, tacitly, to convey that a massive act of terrorism—the deliberate massacre of civilians for political purpose—*could* be legitimate, necessary, appropriate (at least, when done by Americans, in a just cause): and in fact, several *had* been so, in our living experience.

Most Americans ever since have seen the destruction of the population of Hiroshima and Nagasaki as justified—as constituting just means, under the supposed circumstances—thus legitimating, in their eyes, the second and third largest one-day massacres in history. (The largest, also by Americans, was the firebombing of Tokyo five months earlier, which burned alive or suffocated 80,000 to 120,000 civilians. The relatively few Americans who are aware of this event at all accept it, too, as justified.) We are the only country in the world that believes it won a war with airpower—specifically with weapons of mass destruction—and was fully justified in doing so. It is a dangerous state of mind.

Even if the premises of these justifications were premised had been realistic (they were not), the consequences of such judgments for subsequent policymaking were bound to be fateful. They underlay the unquestioning acceptance by American officials and public ever since of basing our security on readiness to carry out threats of mass annihilation by nuclear weapons—even after our initial monopoly was broken, long ago--and the belief by many officials and elites still today that abolition of these weapons is both infeasible and undesirable.

If it had been, after all, the Nazis that first developed and used two or three bombs (the most that wartime resource constraints could have allowed them) before the Americans were able to, the image of the Bomb in the Allied publics would have been starkly different. That would no more have won the war for them than the destruction of Tokyo or Berlin or scores of other cities in Germany and Japan had, in reality, even shortened the war for us. Its use would have been associated with defeat, not victory. Above all, it would have appeared (appropriately) as a quintessentially Nazi weapon, fully expressing their depraved character.

Its use, and even its development to the point of use, would surely have been

charged as a preeminent war crime at Nuremberg—if not a crime against humanity-- and it would have led to convictions and hangings, not only of officials but of scientists and technicians.

The public motivation in America and elsewhere to control and to ban its development, possession or use by anyone--and the prospects for achieving these--would have been radically different from what they were in 1945.

A much better alternative (obviously) would have been for the American people to have had the opportunity and challenge—as we did in our ninth grade classroom—of forming an opinion about the legitimacy and dangers of exploiting the preeminent weapon of mass destruction *before* the debate was permanently prejudiced by America's use of the bomb and the instinct to defend that use.

The crucial revelation that was needed was the authoritative opinion of many top Manhattan Project scientists on the dangers of a nuclear arms race (leading before long, they knew, to vastly more dangerous thermonuclear weapons, the H-bomb), which they believed, correctly, would be made inevitable if the bomb were used on Japan. Yet that warning was withheld by Project managers even from the president, let alone the public.

Led by Leo Szilard—who had taken out the first patent on nuclear chain reaction in 1933 and had induced Einstein to urge what became the Manhattan Project on Roosevelt in 1939 —more than 160 Project scientists signed a petition to the president in June, 1945, asking him seriously to reconsider use of the bomb against Japan, in view both of its immediate moral implications and the potential danger of a nuclear arms race. An earlier form of the petition said simply that, for these reasons, he *should not use it*: *even if its use might save American lives* in the short-run context of the war,.

The petition was bottled up by General Groves, director of the Project; it never got to the president, or even to Secretary of War Henry Stimson until after the bomb had been dropped. There is no record that the scientists' concerns about the future and their judgment of the impact on it of nuclear attacks on Japan were *ever* made known to President Truman before or after his decisions. Still less, made known to the public. The petitions and their reasoning were reclassified secret after Szilard proposed to publish them at the end of the war, and their existence was unknown for a generation.

I have believed for a long time that official secrecy and deceptions about nuclear weapons posture and policies and their possible consequences has threatened the survival of the human species. We have long needed and lacked the equivalent of the Pentagon Papers in this area, above all in the United States and Russia but also in the other nuclear weapons states. I deeply regret that I did not make known to Congress, the American public and the world the extensive documentation of still-unknown nuclear dangers that was available to me forty to fifty years ago as a consultant to and official in the Executive branch working on nuclear war plans, command and control and nuclear crises.

That I had high-level access and played such a role in nuclear planning is, of course, deeply ironic in view of the earlier personal history recounted above. My attitudes toward

nuclear weapons had not changed an iota since 1945, and they never have. Since I was fourteen, the overriding objective of my life has been to prevent the occurrence of nuclear war. But just as the Manhattan Project scientists were driven by a plausible but mistaken fear of a comparable Nazi program, I was one of many in the late Fifties who were misled and recruited into the nuclear arms race by similarly exaggerated, and in this case deliberately manipulated, fears.

Precisely because I did receive clearances and was exposed to top secret intelligence estimates, in particular from the Air Force, I and my colleagues at the RAND Corporation came to be preoccupied with the urgency of averting nuclear war by deterring a Soviet surprise attack that would exploit an alleged "missile gap." That danger (like a Soviet "bomber gap" that preceded it, and others that came later) and the supposedly resulting fragility of deterrence was exactly as illusory as the Nazi bomb project had been, or, to pick a more recent example, as Saddam's supposed WMDs and nuclear pursuit in 2003.

Working conscientiously, desperately, on a wrong problem, countering a delusional threat, I and my colleagues distracted ourselves and help distract others from dealing from real dangers—which we were making worse—and from real opportunities to make the world more safe. Unintentionally, still inexcusably, we helped make the U.S. and the world markedly less safe.

Though eventually the Soviets did emulate us in creating a world-destroying nuclear capability on hair-trigger alert—and Russian nuclear posture and policies continue, along with ours, to endanger civilization and our species—the persistent reality has been that the arms race has been driven primarily by American initiatives and that every major American decision in this sixty-four year nuclear era has been accompanied by unwarranted concealment, obfuscation, and official and public delusions.

To understand the urgency of radical changes in our nuclear policies that may truly move the world toward abolition of nuclear weapons, we need a new understanding of the real history of the nuclear age: based both on newly declassified documents and realities that are still concealed. Using the new opportunities offered by the internet, I plan over the next year—before the sixtieth anniversary of Hiroshima-- to do my part, belatedly, in unveiling this hidden history.

(as I now believe)? I don't remember; probably not. I didn't know what the real short-run incentives were to use such a weapon at that stage of the war. The official claim that there was no other way to end or shorten the war without a bloody invasion would have seemed overwhelmingly plausible, almost self-evident. That story was false in every respect, but I didn't know that for many years. Most Americans don't know it yet. That our highest officials were reading intercepted Japanese diplomatic cables was a secret as well kept from the American public as the Manhattan Project itself, and kept for much longer after the war. The public at the time and for many years later had no inkling of what our officials knew by May, 1945 or earlier: that Japanese leaders—in total contrast to their troops on Okinawa--were urgently debating surrender terms, the key one of which—retention of the Emperor--we were prepared to grant.). It was probably compelling to me, as it was to most of the public. But I was focused on the long run, the precedent.

I believed that something ominous had happened; that it was bad for humanity that the bomb was feasible, and that its use would have bad long-term consequences, whether or not those negatives were balanced or even outweighed by short-run benefits.

I sensed almost right away that these feelings separated me from nearly everyone around me, from my parents and friends and from most Americans. They were not to be mentioned. They could only sound unpatriotic. And in World War II, that was about the last way one wanted to sound. These were thoughts to be kept to myself.

Improbable thoughts, for a fourteen-year-old American boy the week the war ended? Yes, if he hadn't been in Mr. Patterson's Social Studies class the previous fall. Every member of that class must have had the same flash of recognition of the Bomb, as they read the August headlines during our summer vacation. Beyond that, I don't know whether they responded as I did, in the terms of our earlier discussion.

But neither our conclusions then or reactions like mine on August 6 stamped us as moral prodigies. Before that day perhaps no one in the public outside our class—no one else outside the Manhattan Project (and very few inside it)-- had spent a week as we had, or even a day, thinking about the impact of such a weapon on the long-run prospects for humanity.

And we were set apart from our fellow Americans in another important way. Perhaps no others outside the Project or our class ever had occasion to think about the Bomb without the strongly biasing positive associations that accompanied their first awareness in August 1945 of its very possibility: that it was "our" weapon, an instrument of American democracy, pursued by two Presidents, developed to deter a Nazi Bomb, a war-winning weapon and a necessary one—so it was claimed and almost universally believed--to end the war without a costly invasion of Japan.

Unlike nearly all the others who started thinking about the new nuclear era after August 6, our attitudes of the previous fall had not been shaped, or warped, by the deceptive claim and appearance that such a weapon had just won a war for the forces of justice, a feat that supposedly would otherwise have cost a million American lives (and as many or more